**Ch 1 Organisations & Data Management**

# Characteristics of data types, p 22

**Elaborate under each of the following data types:**

1. **Text, (string)**

Text (String) fields holds a mix of characters (letters, numbers, special characters), also referred to as alphanumeric, to a limit of 255. Names and addresses are considered text data.

1. **Numeric – integer, floating point**

Numeric fields will only allow numbers to be entered. They are often used when the value is to be used in a calculation of some kind.

1. **Date**

A date format is another variation of a numeric data type. The value is normally based on the number of days since the ‘zero’ day built into the operating system or DBMS. For example, day ‘1’ might be displayed as 01 January 1900, while ‘42673’ would be displayed as 30 October 2016.

1. **Character**

Character is a text field that will only accept a single alphanumeric character. It is used where there are multiple options for a value, but can be represented with a single character to make data entry easier and to save storage space. For example, the sizes of a wooden box that comes in small, medium or large sizes might be entered as ‘S’, ‘M’ or ‘L’ respectively.

1. **Boolean**

In cases where the data to be entered falls into the categories of Yes/No, True/False, or even On/Off, the Boolean data type is used.

# Databases and database terminology, p 23

1. **What is a database?**

A database is a software tool which is used to hold and retrieve data. Databases are used to handle a range of data, from personal details to school results and financial transations.

1. **Explain the relationship between fields, records and tables.**

A **field** is contained inside a column, and holds a specific piece of information. A **database record** is a set of information about one entity (object, person or event). A **database table** has a primary key which uniquely identifies each record in that table.

1. **Explain the purpose of the following objects in a database: forms, queries, reports & macros.**

**Queries** are used when someone needs to select a set of data. The result of a query is usually turned into usable information by putting it into a report. A **report** formats the query data and allows you to add summary statistics, such as totals, as well as headings, to make the information easier to read and understand. When run, **macros**  will carry out a set of predetermined tasks, such as printing a report. A **form** allows an input screen to be formatted and linked to an underlying table.

1. **What is the purpose of SQL?**

A **Structured Query Language** (SQL) is used by modern DBMSs as a way of standardising how data is managed in databases.

1. **Distinguish between a flat file and a relational database? What are the advantages of using a relational data base**?

A **flat file database** consists of a table with fields organised in columns and records in rows, and example of this is a spread sheet. A **relational database** are used when a form of data is repeated in each transaction, such as the mailing address or a customer or the details of products purchased. Some advantages that come with using a relational data base instead of a flat file database is that they are more efficient and effective.

# Relational databases, p 25

1. **What does RDBMS refer to?**

A **Relational Database Management System** (RDBMS) is a software package written specifically to create these databases.

1. **Explain with eg.s the following different types of relationships between tables in a relational database.**
   1. **One-to-one relationship**

A **One-to-One Relationship** is used when a record in one table is connected to only one record in the second table. For example, an airline’s passenger details table will contain records for many passengers, while a seat allocation table may hold records related to the seats on a particular flight. A one-to-one relationship exists between a passenger and their seat allocation.

* 1. **One-to-many relationship**

A **One-to-Many Relationship** indicated that one record in the first table can be connected to more than one record in a second able. For example, several workers in an office may share a single telephone extension. Each extension record is related to several employee records.

* 1. **Many-to-many-relationship**

A **Many-to-Many Relationship** is used when each record in the first table can be connected to a number of records in the second table. At the same time, each record in the second table may be related to many records in the first table. For example, a student detail table and a subject detail table may have a many-to-one relationship. Each student studies many subject and each subject is studied by many students.

1. **What is meant by a foreign key?**

For a relationship to be established between two or more tables, they must have a common field. The primary key in a table usually acts as the field that joins the tables. A **foreign key** is when a primary key is used in another table.

# Creating an RDMS structure, p 26

1. **Why is it important to consider how to structure the data in a database? What needs to be considered?**

It is important to plan the structure of the data carefully to maximise the efficiency of a relational database.

1. **What is the purpose of an entity relationship diagram? (go to p 28 to answer the following).**

An **entity-relationship diagram** (ERD) is used by database designers to establish the interrelationships between different data elements. Once entities have been determined and their attributes identified, an ERD is created to show how the entities relate to each other.

1. **What are entities, use an eg. from p 28, and how are they represented?**

An entity is a single person, place or thing about which data can be stored. Characteristics of an entity may include data elements lole ID numbers, names, dates, addresses and prices. For example, and entity may be a book (which would be represented with by a box.

1. **What are the attributes and how are they represented?**

Attributes are the elements of data we collect about the entities. For example, this may be the title of a book or the author of that book). In diagrams, they are represented by ovals.

1. **How are relationships represented?**

Relationships are represented by diamonds.

1. **What is the difference between the Chen and Bachman models of representing ERD’s?**

In the Chen model, ERDs use a simple set of symbols, much like a flow chart. Whereas the Bachman style will show the attributes in a table for each entity.